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- Sub A17

~~4~~ 8. The antenna according to claim ~~8~~², wherein the ceiling member and the side member are connected to each other electrically.

~~5~~ 9. The antenna according to claim ~~6~~², wherein the ceiling member has a periphery having a curved shape.

Sub A27 10. The antenna according to claim 1, wherein the bottom member and/or the side member have openings.

Sub B37 11. The antenna according to claim 6, wherein the ceiling member has openings.

9 12. The antenna according to claim ~~10~~⁷ or ~~11~~⁸, wherein the openings have means of adjusting their size.

Sub A37 13. The antenna according to claim 11, wherein, if it is assumed that a projection of the conductive member onto the bottom member is an origin point and the bottom member is arranged in an X-Y plane, the bottom member and the side member are symmetric with respect to a Z-Y plane, and the openings are symmetrically arranged with respect to a Z-Y plane.

11 14. The antenna according to claim ~~13~~¹⁰, wherein the bottom member and the side member are symmetric with respect to a Z-X plane, and the openings are symmetrically arranged with respect to a Z-X plane.

Sub A47 15. The antenna according to claim 1 or 6, comprising a dielectric member that has a permittivity higher than air and is provided in the space.

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~~16.~~ The antenna according to claim ¹²~~15~~, wherein the dielectric member is provided at least so as to cover a part of the space which is not covered with the ceiling conductor.

¹⁴
~~17.~~ The antenna according to claim ¹²~~15~~, wherein the dielectric member fills the entire inside of the space.

¹⁵
~~18.~~ The antenna according to claim ¹²~~17~~, wherein the dielectric member has a via hole, and the side member consists of the via hole.

¹⁶
~~19.~~ The antenna according to claim ¹²~~1 or 6~~, further comprising at least one matching element which is arranged apart by a predetermined distance from the conductive member, wherein the matching element and the bottom member are connected to each other electrically.

¹⁷
~~20.~~ The antenna according to claim ¹⁶~~19~~, wherein at least one of the matching elements is electrically connected to the conductive member.

¹⁸
~~21.~~ The antenna according to claim ¹⁶~~19~~, wherein at least one of the matching elements is electrically connected to the ceiling member and/or the side member.

¹⁹
~~22.~~ An arrangement method of antennas that is an arrangement method of the antennas according to claim ¹⁶~~1~~, comprising a step of aligning and arranging the plural antennas in a manner to conform a direction for minimizing directivity of each of the antennas on a horizontal plane.

the antenna according to claim 1 or 6; and all or part of a circuit for transmission and/or reception which is connected to the signal line while being arranged in the space.

25. The antenna device according to claim 24, wherein the shielding member is formed as a concave portion that is each part of the bottom member and/or the side member; and

26. The antenna device according to claim 25, further comprising a lid member which covers the concave portion and stores all or part of the circuit, wherein the lid member is electrically connected to the bottom member and/or the side member.

~~25~~ 28. The antenna device according to claim ~~23~~²⁹, wherein an active element is contained in the circuit.

26~~29~~. The antenna device according to claim ~~23~~²⁰, wherein a microwave circuit is contained in the circuit.

- 27 ²⁷~~30~~. The antenna device according to claim ²²⁰~~23~~, wherein an optical passive element is contained in the circuit.
- 28 ²⁸~~31~~. The antenna device according to claim ²²⁰~~23~~, wherein an optical active element is contained in the circuit.
- 29 ²⁹~~32~~. The antenna device according to claim ²²⁰~~23~~, wherein the circuit has an IC.
- 30 ³⁰~~33~~. The antenna device according to claim ²²⁰~~23~~, wherein the circuit has such size that the circuit is hidden behind the ceiling member, when viewing the antenna device from the ceiling member side in the direction perpendicularly to the ceiling member.
- 31 ³¹~~34~~. An array antenna device that is an array antenna device where the plural antenna devices according to claim ²²⁰~~23~~ are arrayed, wherein the circuits in the plural antenna devices each input or output the same signal.
- 32 ³²~~35~~. The array antenna device according to claim ²²⁰~~23~~, wherein the circuit has a cartridge form so as to be detachable from the antenna.
- 33 ³³~~36~~. The antenna device according to claim ²²⁰~~23~~, wherein the circuit comprises plural sub-circuits having radio systems different from each other, and switching means of switching the connection between anyone of the sub-circuits and the antenna.

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³⁴
~~37~~. The antenna device according to claim ²⁰~~23~~, wherein the circuit is arranged in the position that hides the circuit behind the ceiling member, when viewing the antenna device from the ceiling member side in the direction perpendicularly to the ceiling member.

³⁵
~~38~~. The antenna device according to claim ²⁰~~23~~, wherein the circuit comprises: amplification means of amplifying the signal for the transmission and/or reception; and frequency selection means of selecting a frequency of the signal for transmission or the signal for reception.

³⁶
~~39~~. A radio equipment comprising the antenna device according to any one of claims ²⁰~~23~~, and a power supply circuit provided in the circuit.

TELETYPE UNIT

Add A87